Project Baseline Summary Report

Data Source: **EM CDB**
Report Number: **GEN-01b**
Operations/Field Office: **Savannah River**
Print Date: **3/9/2000**
Site Summary Level: **Savannah River Site**
HQ ID: **0507**
Project **SR-FA10 / R Reactor Deactivation Project**

General Project Information

Project Description Narratives

Purpose, Scope, and Technical Approach:

Definition of Scope: Deactivation of R Area will involve:

1. Collection, packaging, and storing unknown volume of scrap from the disassembly basin;
2. Collection, stabilizing, packaging, and storing of an estimated 7,000 - 10,500 cubic feet of sludge from the disassembly basin;
3. Deionization and evaporation of 5.6 million gallons of water from the disassembly basin;
4. Deionization and evaporation of water from the 106 and 109 collection sumps (maximum combined capacity of 48,000 gallons);
5. Grouting of the 106 and 109 collection sumps with a combined volume of 12,850 cubic feet;
6. Draining and collection of up to 1800 gallons of contaminated heavy water and contaminated light water from small piping;
7. Preparation and implementation of facility characterization and deactivation plans; and,
8. Preparation and implementation of a facility long term surveillance and maintenance plan.

Technical Approach: Deactivation of R Area can be accomplished with existing technology. No technology development is anticipated for the effort. The following describes the technical approach for R Area deactivation:

a. Disposal of scrap: Disassembly basin equipment and scrap will be placed in containers and stored in a solid waste repository.
b. Disposal of sludge: Basin sludge will be collected by underwater vacuuming, and free water will be removed or fixed. Similar methods have been successfully demonstrated in the past during the partial sludge removal efforts for L Reactor. Deposits removed from walls by water blasting during basin water removal will also be collected. The sludge will be placed in containers and stored in a solid waste repository.
c. Disposal of water from disassembly basin and the 106 and 109 collection sumps: Water will be passed through deionizers to remove radioactive ions and will be evaporated.
d. Grouting of the 106 and 109 collection sumps: The sumps will be filled with grout in a process already demonstrated on several SRS waste storage tanks.
e. Draining of small piping: Pipes will be drained by cutting, drilling, and disassembly. Collected water will be processed to recover heavy water or stored if processing facilities are no longer available.

Project Status in FY 2006:

Site funding limitations currently preclude funding for the larger deactivation projects that would be needed to significantly reduce P Area surveillance and maintenance costs. Current funding guidance indicates that the large scale deactivation scope outlined in this PBS will begin after FY06. Until such time, R Area will be maintained at a higher level of surveillance and maintenance costs commensurate with the risk posed by the R Area facilities. This does not preclude, however, the planning and implementation of smaller scale projects encompassing a portion of the scope for this ACP project. These projects would be initiated to reduce a specific risk, thereby lowering surveillance and maintenance costs associated with that particular risk. Funding for this type of project would be incremental to the R Area surveillance and maintenance budget. As funding for these small scale projects is speculative, no consideration is given to them in this PBS.

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Post-2006 Project Scope:

The post-FY06 work scope is essentially the entire deactivation project work scope. Current funding guidance indicates that these deactivation activities will begin after FY06. Deactivation is expected to be complete by FY12. At such time, a routine of quarterly entries will be established. These entries will verify the structural integrity of R Area facilities, and verify the operational integrity of sump pumping equipment and environmental monitoring equipment required by the surveillance and maintenance plan. This quarterly monitoring will continue until final disposition of the facilities.

Project End State

This project provides for the deactivation of R Area only. Additional projects will be required to meet the EM site end state. Contamination in R Area is expected to be consolidated within the confines of the 105-R Reactor building. Deactivation of the disassembly basin and the 106 and 109 collection sumps is expected to reduce or eliminate groundwater monitoring in R Area. At this time, an end state for the facilities in R Area have not been defined. Reuse of facilities has been considered in the past. However, no plans have been made at this time to reuse R Area facilities after deactivation (post-FY12).

No nuclear materials (other than depleted uranium oxide), spent fuel, or high level waste are stored in R Area, nor will any be generated by this project. Primary wastes generated by this project will be contaminated water and sludge from the disassembly basin, most likely categorized in both cases as low level waste or mixed waste. Specific treatment methodologies for these wastes will depend on characterization, which has not been performed at this time.

Cost Baseline Comments:

Costs identified in this PBS are rough order of magnitude engineering estimates only. Some historical data for a few activities, such as sludge vacuuming, was used for these estimates. Work scope identified in this PBS is based on process and facility history only, not from detailed characterization of facility hazards. Such characterization efforts will likely alter the scope and cost of this project.

Safety & Health Hazards:

As the project will not be funded until after FY06, no safety and hazards analysis has been performed for R Area deactivation activities. Such analyses will be performed in accordance with Site standards. The criteria for determining the radiological hazard categories are provided in DOE-STD-1027-92, and the criteria for determining the chemical hazard categorization are provided in WSRC-MS-92-206.

Safety & Health Work Performance:

Activities and check points are described by the Integrated Management System Description. The conditions and requirements are clearly established and agreed upon prior to the starting of any project and those requirements are contractually binding upon WSRC. The key elements of the WSRC Integrated Safety Program are to define the scope of work, identify and analyze hazards associated with the work, develop and implement hazard controls, perform work within controls, and provide feedback on adequacy of controls and continue to improve safety management. The WSRC Integrated Procedures Management System is the primary mechanism for implementing the objective, principles and functions of the Safety Management System. This system establishes Company-Level, Division-level, and Program-specific procedures consistent with organizational roles,

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Project Description Narratives

and ensures a consistent, discipline site-wide approach to safety while performing work.

PBS Comments:

In FY97, asbestos abatement was performed on the abandoned 704-R administrative facility. In addition, disassembly basin precharacterization sampling was undertaken in FY97 and is expected to be completed in early FY98.

Baseline Validation Narrative:

Not Applicable.

General PBS Information

Project Validated? **Date Validated:**

Has Headquarters reviewed and approved project? No

Date Project was Added: 12/1/1997

Baseline Submission Date: 7/3/1999

FEDPLAN Project? Yes

Drivers:

CERCLA	RCRA	DNFSB	AEA	UMTRCA	State	DOE Orders	Other
N	N	N	N	N	Y	Y	Y

Project Identification Information

DOE Project Manager: S. L. Johnson

DOE Project Manager Phone Number: 803-557-3828

DOE Project Manager Fax Number: 803-557-3669

DOE Project Manager e-mail address: sandra-l.johnson@srs.gov

Is this a High Visibility Project (Y/N):

Planning Section

Baseline Costs (in thousands of dollars)

1997-2006 Total	2007-2070 Total	1997-2070 Total	1997	Actual 1997	1998	Actual 1998	1999	2000	2001	2002	2003	2004	2005	2006

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PBS Baseline (current year dollars)	0	18,346	18,346						0	0	0	0	0	0	0
PBS Baseline (constant 1999 dollars)	0	13,061	13,061						0	0	0	0	0	0	0
PBS EM Baseline (current year dollars)	0	18,346	18,346						0	0	0	0	0	0	0
PBS EM Baseline (constant 1999 dollars)	0	13,061	13,061						0	0	0	0	0	0	0

	2007	2008	2009	2010	2011-2015	2016-2020	2021-2025	2026-2030	2031-2035	2036-2040	2041-2045	2046-2050	2051-2055	2056-2060	2061-2065	2066-2070
PBS Baseline (current year dollars)	735	753	2,772	4,819	9,267	0	0	0	0	0	0	0	0	0	0	0
PBS Baseline (constant 1999 dollars)	584	582	2,087	3,533	6,275	0	0	0	0	0	0	0	0	0	0	0
PBS EM Baseline (current year dollars)	735	753	2,772	4,819	9,267	0	0	0	0	0	0	0	0	0	0	0
PBS EM Baseline (constant 1999 dollars)	584	582	2,087	3,533	6,275	0	0	0	0	0	0	0	0	0	0	0

Baseline Escalation Rates

1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009
			3.60%	3.60%	2.70%	2.70%	2.70%	2.70%	2.70%	2.70%	2.70%	2.70%

2010	2011-2015	2016-2020	2021-2025	2026-2030	2031-2035	2036-2040	2041-2045	2046-2050	2051-2055	2056-2060	2061-2065	2066-2070
2.70%	2.70%	2.70%	2.70%	2.70%	2.70%	2.70%	2.70%	2.70%	2.70%	2.70%	2.70%	2.70%

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Project Reconciliation

Project Completion Date Changes:

Previously Projected End Date of Project: 6/1/2012

Current Projected End Date of Project: 6/1/2012

Explanation of Project Completion Date Difference (if applicable):

Project Cost Estimates (in thousands of dollars)

Previously Estimated Lifecycle Cost (1997 - 2070, 1998 Dollars):	12,719	**Actual 1997 Cost:**	**Actual 1998 Cost:**	
Previously Estimated Lifecycle Cost of Project (1999 - 2070, 1998 Dollars):	12,719	**Inflation Adjustment (2.7% to convert 1998 to 1999 dollars):**		343
Previously Estimated Lifecycle Cost (1999 - 2070, 1999 Dollars):	13,062			

Project Cost Changes

	Cost Adjustments	Reconciliation Narratives
Cost Change Due to Scope Deletions (-):		
Cost Reductions Due to Efficiencies (-):		
Cost Associated with New Scope (+):		
Cost Growth Associated with Scope Previously Reported (+):		
Cost Reductions Due to Science & Technology Efficiencies (-):		
Subtotal:	13,062	
Additional Amount to Reconcile (+):	-1	
Current Estimated Lifecycle Cost (1999 - 2070, 1999 Dollars):	**13,061**	

Milestones

Milestone/Activity	Field Milestone Code	Original Date	Baseline Date	Legal Date	Forecast Date	Actual Date	EA	DNFSB	Mgmt. Commit.	Key Decision	Intersite
Project Mission Complete	SR-FA10-011		6/1/2012								

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Milestones

Milestone/Activity	Field Milestone Code	Original Date	Baseline Date	Legal Date	Forecast Date	Actual Date	EA	DNFSB	Mgmt. Commit.	Key Decision	Intersite
Project Start	SR-FA10-001		10/1/2006								
R Reactor Deactivated	SR-FA10-003		12/1/2011								

Milestones - Part II

Milestone/Activity	Field Milestone Code	Critical Decision	Critial Closure Path	Project Start	Project End	Mission Complete	Tech Risk	Work Scope Risk	Intersite Risk	Cancelled	Milestone Description
Project Mission Complete	SR-FA10-011				Y						
Project Start	SR-FA10-001			Y							
R Reactor Deactivated	SR-FA10-003		Y				1	4	1		

Performance Measure Metrics

Category/Subcategory	Units	1997-2006 Total	2007-2070 Total	1997-2070 Total	Actual Pre-1997	Planned 1997	Actual 1997	Planned 1998	Planned 1999	Planned 2000	Planned 2001	Planned 2002	Planned 2003	Planne 20(
Fac.														
Deact. During Per.	NF	0.00	2.00	2.00										
Tech.														
Deployed	Ntd	0.00	18.00	18.00										

Category/Subcategory	Units	Planned 2004	Planned 2005	Planned 2006	Planned 2007	Planned 2008	Planned 2009	Planned 2010	Planned 2011 - 2015	Planned 2016 - 2020	Planned 2021 - 2025	Planned 2026 - 2030	Planned 2031 - 2035
Fac.													
Deact. During Per.	NF								2.00				
Tech.													
Deployed	Ntd					18.00							

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Category/Subcategory	Units	Planned 2036 - 2040	Planned 2041 - 2045	Planned 2046 - 2050	Planned 2051 - 2055	Planned 2056 - 2060	Planned 2061 - 2035	Planned 2066 - 2070	Exceptions	Lifecycle Total
Fac.										
Deact. During Per.	NF									2.00
Tech.										
Deployed	Ntd									18.00

Technology Needs

Site Need Code: SR99-4014

Site Need Name: Basin Cleanup Technology

Focus Area Work Package ID: DD-10

Focus Area Work Package: Production Reactor D&D

Focus Area: DDFA

Agree with Technology Link: Y

Benefits (Cost, Risk Reduction, Both): Cost

Technologies	Cost Savings (in thousands of dollars)	Range of Estimate
Membrane-Supported Particle-Bound Ligands for Cesium Removal		
Specialized Separation Utilizing 3M Membrane Technology		

Related CCP Milestones	Related Waste Streams	Agree?	Change?
	01915: -	Y	N
	00540: LAL - Special Case Waste	Y	N
	00528: LAE - Incinerable Low Activity Job Control Waste	Y	N

Technology Deployments

	Deployment Year		
Deployment Status	**Planned**	**Forecast**	**Actual Date**

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Technology Deployments

		Deployment Year		
Deployment Status		**Planned**	**Forecast**	**Actual Date**
Technology Name:	Laser Surface Cleaning			
Potential Deployment		2008		
Technology Name:	Small Pipe Characterization System (SPCS)			
Potential Deployment		2008		
Technology Name:	In Situ Chemical Treatment of Asbestos			
Potential Deployment		2008		
Technology Name:	Airborne Laser Induced Fluorescence Imaging			
Potential Deployment		2008		
Technology Name:	Three Dimensional, Integrated Characterization and Archiving System (3D-ICAS)			
Potential Deployment		2008		
Technology Name:	Portable X-Ray, K-Edge Heavy Metal Detector			
Potential Deployment		2008		
Technology Name:	Thermal Conversion of Asbestos			
Potential Deployment		2008		
Technology Name:	Removal of Contaminants from Equipment and Debris, and Waste Minimization Using TECHXTRACT			
Potential Deployment		2008		
Technology Name:	2-D Linear Motion System			
Potential Deployment		2008		

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Technology Deployments

		Deployment Year		
Deployment Status		**Planned**	**Forecast**	**Actual Date**
Technology Name:	Portable X-Ray Fluorescence Spectrometer			
Potential Deployment		2008		
Technology Name:	Mobile Automated Characterization System			
Potential Deployment		2008		
Technology Name:	Pipe Crawler Internal Piping Characterization System			
Potential Deployment		2008		
Technology Name:	Surface Contamination Monitor and Survey Information Management System (SCM/SIMS)			
Potential Deployment		2008		
Technology Name:	Pegasus Coating Removal			
Potential Deployment		2008		
Technology Name:	Indoor Radiation Mapping Using Laser Assisted Ranging and Data System			
Potential Deployment		2008		
Technology Name:	Ground Based Laser Induced Fluorescence Imaging			
Potential Deployment		2008		
Technology Name:	Diamond wire cutting			
Potential Deployment		2008		
Technology Name:	Reducing grout			
Potential Deployment		2008		